



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :	A3	(11) International Publication Number: WO 00/24878
C12N 9/02, A01H 4/00		(43) International Publication Date: 4 May 2000 (04.05.00)
(21) International Application Number: PCT/GB99/03538		[GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB).
(22) International Filing Date: 26 October 1999 (26.10.99)		(74) Agent: BOWDERY, A., O.; D/IPR, Formalities Section, Poplar 2, MOD Abbey Wood # 19, Bristol BS34 8JH (GB).
(30) Priority Data: 9823468.5 28 October 1998 (28.10.98) GB		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(71) Applicant (for all designated States except US): THE SECRETARY OF STATE FOR DEFENCE [GB/GB]; Defence Evaluation and Research Agency, Ively Road, Farnborough, Hampshire GU14 0XL (GB).		
(72) Inventors; and		Published
(75) Inventors/Applicants (for US only): / SQUIRRELL, David, James [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB) MURPHY, Melenie, Jane [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB). PRICE, Rachel, Louise [GB/GB]; CBD, Porton Down, Salisbury, Wiltshire SP4 0JQ (GB) LOWE, Christopher, Robin [GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB). WHITE, Peter, John [GB/GB]; The Babraham Institute, Babraham Hall, Village of Babraham, Cambridge CB2 4AT (GB) TISI, Laurence, Carlo [GB/GB]; Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge CB2 4AT (GB). MURRAY, James, Augustus, Henry		With international search report.
(54) Title: MUTANT LUCIFERASE HAVING INCREASED THERMOSTABILITY		(88) Date of publication of the international search report: 3 August 2000 (03.08.00)

(57) Abstract

A protein having luciferase activity and at least 60 % similarity to luciferase from *Photinus pyralis*, *Luciola mingrelica*, *Luciola cruciata* or *Luciola lateralis*, *Hotaria paroula*, *Pyrophorus plagiophthalmus*, *Lampyris noctiluca*, *Pyrocoelia nayako* or *Photinus pennsylvanicus* wherein in the sequence of the enzyme, at least one of (a) the amino acid residue corresponding to residue 214 in *Photinus pyralis* luciferase; (b) the amino acid residue corresponding to residue 232 in *Photinus pyralis* luciferase; (c) the amino acid residue corresponding to residue 295 in *Photinus pyralis* luciferase; (d) the amino acid residue corresponding to acid 14 of *Photinus pyralis* luciferase; (e) the amino acid residue corresponding to amino acid 35 of *Photinus pyralis* luciferase; (f) the amino acid residue corresponding to amino acid residue 105 of *Photinus pyralis* luciferase; (g) the amino acid residue corresponding to amino acid residue 234 of *Photinus pyralis* luciferase; (h) the amino acid residue corresponding to amino acid residue 420 of *Photinus pyralis* luciferase; (i) the amino acid residue corresponding to amino acid residue 310 of *Photinus pyralis* luciferase; is different to the amino acid which appears in the corresponding wild type sequence and wherein the luciferase enzyme has increased thermostability as compared to an enzyme having the amino acid of the corresponding wild-type luciferase at this position.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						